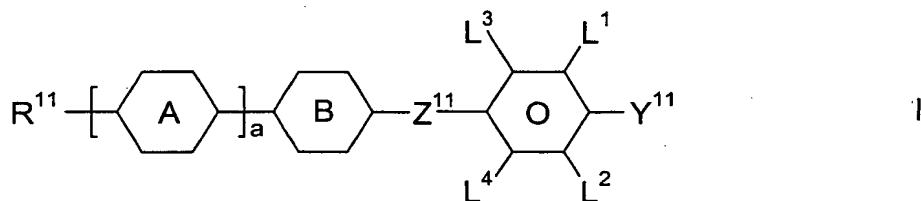


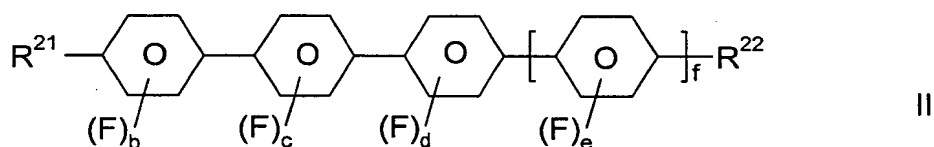
# Patent Claims

1. Liquid-crystalline medium comprising  
- at least one compound of the formula I



and

- at least one compound of the formula II



in which

$L^1, L^2, L^3$  and  $L^4$   
 $R^{11}$

are each, independently of one another, H or F;  
is H, a halogenated or unsubstituted alkyl radical  
having from 1 to 15 carbon atoms, where, in  
addition, one or more  $CH_2$  groups in these radicals  
may each be replaced, independently of one  
another, by  $-C\equiv C-$ ,  $-CH=CH-$ ,  $-O-$ ,  $-CO-O-$  or  
 $-O-CO-$  in such a way that O atoms are not linked  
directly to one another;

$R^{21}$  and  $R^{22}$

are each, independently of one another, H, Cl, F,  
CN,  $SF_5$ , SCN, NCS, a halogenated or  
unsubstituted alkyl radical having from 1 to 15  
carbon atoms, where, in addition, one or more  $CH_2$   
groups in these radicals may each be replaced,  
independently of one another, by  $-C\equiv C-$ ,  $-CH=CH-$ ,

Y<sup>11</sup>

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Z<sup>11</sup>

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a and f,  
b, c, d and e

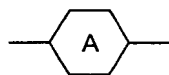
-O-, -CO-O- or -O-CO- in such a way that O atoms  
are not linked directly to one another;

is F, Cl, CN, SF<sub>5</sub>, SCN, NCS, a halogenated alkyl  
radical, a halogenated alkenyl radical, a halogen-  
ated alkoxy radical or a halogenated alkenyloxy  
radical, each having up to 6 carbon atoms;

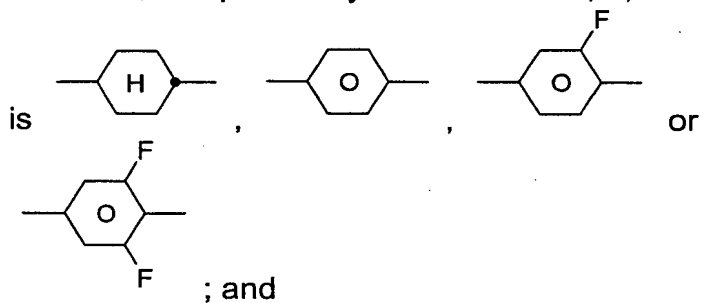
is a single bond, -CH<sub>2</sub>-CH<sub>2</sub>-, -CH=CH-, -CH=CF-,  
-CF=CH-, -CF=CF-, -C≡C-, -COO-, -OCO-, -CF<sub>2</sub>O-  
or -OCF<sub>2</sub>-;

independently of one another, are 0 or 1;

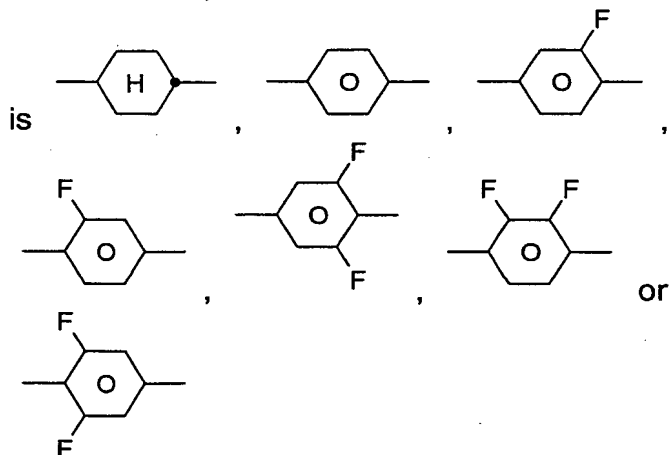
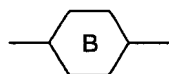
are each, independently of one another, 0, 1 or 2;



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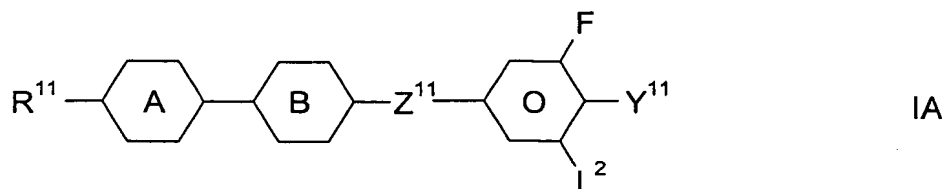
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2. Liquid-crystalline medium according to Claim 1, comprising  
- at least one compound of the formula IA

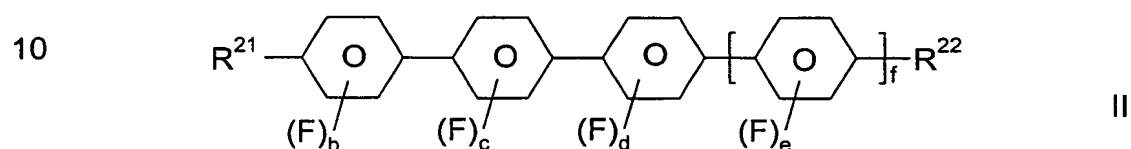
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- 88 -



and

- at least one compound of the formula II



in which

 $L^2$ 

is H or F;

 $R^{11}$ 

is H, a halogenated or unsubstituted alkyl radical having from 1 to 15 carbon atoms, where, in addition, one or more  $CH_2$  groups in these radicals may each be replaced, independently of one another, by  $-C\equiv C-$ ,  $-CH=CH-$ ,  $-O-$ ,  $-CO-O-$  or  $-O-CO-$  in such a way that O atoms are not linked directly to one another;

 $R^{21}$  and  $R^{22}$ 

are each, independently of one another, H, Cl, F, CN,  $SF_5$ , SCN, NCS, a halogenated or unsubstituted alkyl radical having from 1 to 15 carbon atoms, where, in addition, one or more  $CH_2$  groups in these radicals may each be replaced, independently of one another, by  $-C\equiv C-$ ,  $-CH=CH-$ ,  $-O-$ ,  $-CO-O-$  or  $-O-CO-$  in such a way that O atoms are not linked directly to one another;

 $Y^{11}$ 

is F, Cl, CN,  $SF_5$ , SCN, NCS, a halogenated alkyl radical, a halogenated alkenyl radical, a halogenated alkoxy radical or a halogenated alkenyloxy radical, each having up to 6 carbon atoms;

$Z^{11}$ 

f

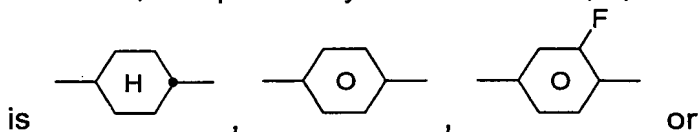
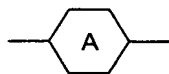
b, c, d and e

is a single bond, -COO- or -CF<sub>2</sub>O-;

is 0 or 1;

are each, independently of one another, 0, 1 or 2;

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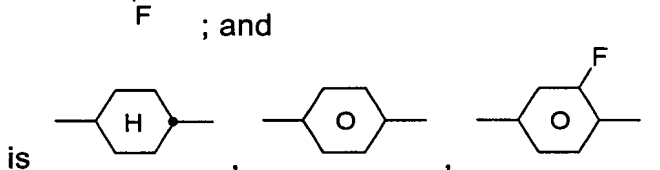
is

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or

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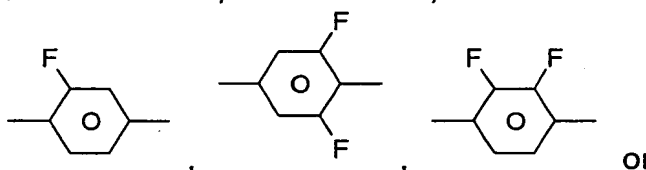
is

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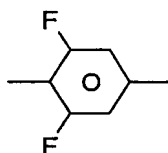


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or

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3. Liquid-crystalline medium according to any one of Claims 1 and 2, characterised in that f in the formula II is 0.

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4. Liquid-crystalline medium according to any one of Claims 1 and 2, characterised in that f in the formula II is 1.

5. Liquid-crystalline medium according to any one of Claims 1 to 4, characterised in that

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$R^{11}$  and  $R^{21}$ , independently of one another, are straight-chain alkyl having from 1 to 7 carbon atoms; and

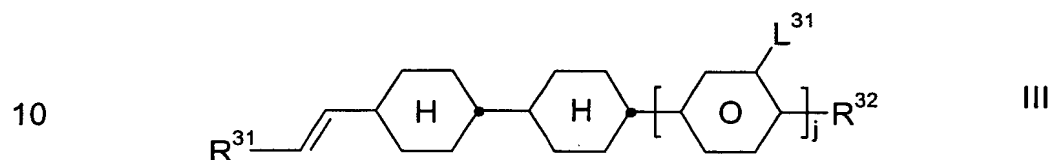
$R^{22}$  is Cl, F, CF<sub>3</sub> or straight-chain alkyl having from 1 to 7 carbon atoms.

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6. Liquid-crystalline medium according to any one of Claims 1 to 5, characterised in that

$Y^{11}$  is F, Cl,  $CF_3$ ,  $OCHF_2$  or  $OCF_3$ .

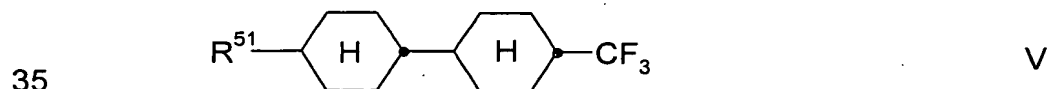
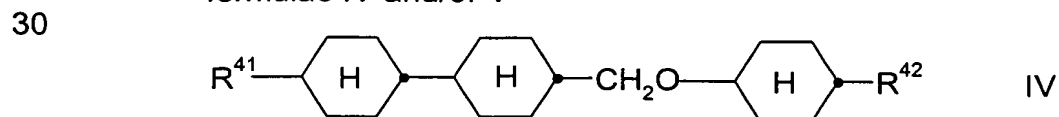
- 5 7. Liquid-crystalline medium according to any one of Claims 1 to 6, characterised in that it furthermore comprises a compound of the formula III



in which

- 15  $L^{31}$  is H or F;  
 $R^{31}$  is H, a halogenated or unsubstituted alkyl radical having from 1 to 15 carbon atoms, where one or more  $CH_2$  groups in these radicals may also be replaced by  $-C\equiv C-$ ,  $-CH=CH-$ ,  $-O-$ ,  $-CO-O-$  or  $-O-CO-$  in such a way that O atoms are not linked directly to one another;  
 20  $R^{32}$  is H, F, Cl, a halogenated or unsubstituted alkyl radical having from 1 to 15 carbon atoms, where one or more  $CH_2$  groups in these radicals may also be replaced by  $-C\equiv C-$ ,  $-CH=CH-$ ,  $-O-$ ,  $-CO-O-$  or  $-O-CO-$  in such a way that O atoms are not linked directly to one another; and  
 25  $j$  is 0 or 1.

8. Liquid-crystalline medium according to any one of Claims 1 to 7, characterised in that it furthermore comprises a compound of the formulae IV and/or V



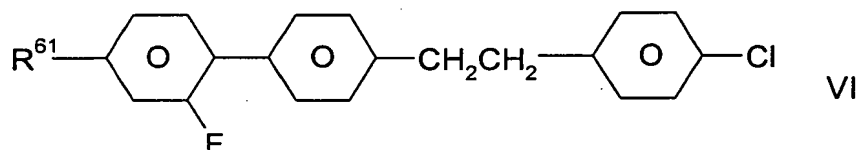
in which

$R^{41}$ ,  $R^{42}$  and  $R^{51}$ , independently of one another, are alkyl having from 1 to 12 carbon atoms.

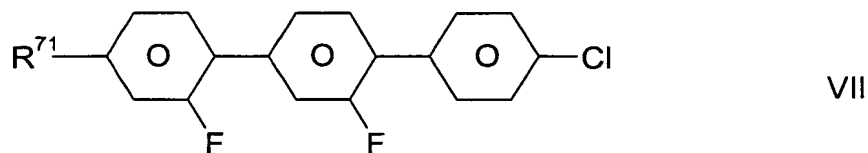
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9. Liquid-crystalline medium according to any one of Claims 1 to 8, characterised in that it furthermore comprises a compound of the formulae VI and/or VII and/or VIII

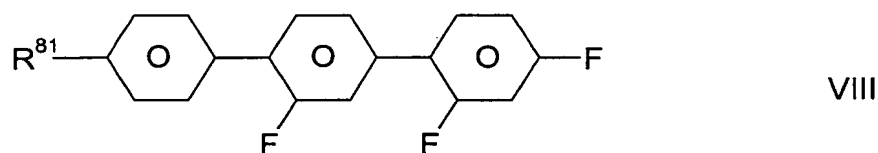
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in which

- 25  $R^{61}$ ,  $R^{71}$  and  $R^{81}$ , independently of one another, are alkyl having from 1 to 12 carbon atoms.

10. Liquid-crystalline medium according to any one of Claims 1 to 9, characterised in that the proportion of the compounds of the formula II in the mixture as a whole is from 0.1 to 10% by weight, in particular from 0.25 to 5% by weight and particularly preferably from 0.5 to 2% by weight.

11. Use of the liquid-crystalline medium according to any one of Claims 1 to 10 for electro-optical purposes.

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12. Electro-optical liquid-crystal display containing a liquid-crystalline medium according to any one of Claims 1 to 10.

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